



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Application Number: 09/761,774

Group Art Unit: 2618

Filed: January 18, 2001

Examiner Name: TRAN, Tuan A.

Applicant: CANNON *et al.*

Attorney Docket Number: 20-146

TITLE: BLUETOOTH CONNECTION QUALITY INDICATOR

Total Number of Pages in this Submission: 17

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

SIR:

Transmitted herewith is:

A Corrected Appeal Brief in the above-identified application (17 Pages)

The Commissioner is hereby authorized to charge any additional fees required under 37 C.F.R. 1.16 or any patent application processing fees under 37 C.F.R. 1.17 associated with this communication, or credit any over payment to Deposit Account No. 50-0687 under Order No. 20-146.

Respectfully submitted,

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Date: October 5, 2007

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Examiner: TRAN, Tuan A.

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In re Patent Application of:

CANNON et al.

Title: **BLUETOOTH CONNECTION QUALITY INDICATOR**

October 5, 2007

CORRECTED APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicants submit the following Appeal Brief in accordance with the requirements of 37 C.F.R. § 41.37(c).

(1) REAL PARTY IN INTEREST

The real party in interest is LSI Corporation, which merged with Agere Systems Inc. on April 2, 2007.

(2) RELATED APPEALS AND INTERFERENCES

The Applicants and their legal representatives and assignee are not aware of any other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the appending appeal.

(3) STATUS OF THE CLAIMS

Claims 1-14 and 16-23 are pending in this application. Claims 15 and 24 have been cancelled. Claims 1-14 and 16-23 stand rejected and are the subject of this appeal.

(4) STATUS OF AMENDMENTS

All amendments have been entered by the Examiner. Applicants have not attempted any amendments after the second Final Office Action dated November 9, 2006.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to the implementation of a user friendly connection quality indicator in BLUETOOTH™ piconet type network devices.

Piconets are small wireless networks. Their wireless frequency may be 2.4 GHz as per BLUETOOTH standards, and/or typically have a 20 to 100 foot range.

A plurality of piconet networks may be interconnected through a scatternet connection, in accordance with BLUETOOTH protocols. BLUETOOTH network technology may be utilized to implement a wireless piconet network connection (including scatternet). The BLUETOOTH standard for wireless piconet networks is well known, and is available from many sources, e.g., from the web site www.bluetooth.com.

Short range wireless connections such as those offered by piconets in general, and BLUETOOTH conforming piconets in particular, have many

advantages provided by wireless connectivity. They also inherently have a distinct disadvantage from wired connections. In particular, users of wireless piconet devices do not have information relating to placement of a piconet device in a location where a wireless signal will start to degrade.

In the example of piconets, the short-range wireless connection area is specified as approximately 10 meters. However, in reality, the 10 meter sphere is not always perfect. In particular, the range of a particular wireless device, and the quality of the wireless signal within that range, will have an irregular shape and distance depending on the design of the antenna. Additionally, based on the route or number of timeslots available, the data rate of the connection can vary widely. Signal quality may degrade as a result.

Moreover, a BLUETOOTH device may be placed in a marginal location with respect to the antenna of another BLUETOOTH device in the piconet, nevertheless within range and specifications, but allowing only marginal communications data rates, thus causing degraded communications with the other BLUETOOTH device, unbeknownst to the typical user of the BLUETOOTH devices. While the communications quality is degraded, the piconet devices may be capable of communicating with low data rates, or low signal strength, or high error rates nevertheless, giving the user the false impression that the piconet network is in satisfactory operating condition.

The invention solves the problem of allowing piconet devices, and in particular BLUETOOTH piconet devices, to indicate to a user that they should be moved to more optimal locations with respect to one another to optimize short range communications capabilities.

The claims recite a system and method that determine an amount of quality achieved above a compliance level to an acceptable level necessary to establish a presence in a piconet network, the acceptable level being configurable by a user of a wireless piconet device; and provides for an indication of a quality above an acceptable level.

Independent claim 1 recites a wireless piconet device (p. 5, lines 29-30; fig. 1, ref 110) that comprises a piconet front end (p. 6, lines 3-4; fig. 1, ref.

130), a piconet connection quality determiner (p. 5, line 30 – p. 6, line 1; ref. 102), and a user link quality indicator (p. 6, line 1; fig. 1, ref. 100). The user link quality indicator (fig. 1, ref. 100) indicates an amount of quality achieved beyond that of an acceptable level necessary to establish a presence in a piconet network, with the user of the wireless piconet device configuring the acceptable level (p. 7, lines 24-30 – p. 8, lines 1-4). The piconet connection acceptable quality determiner (fig. 1, ref 102) determines a condition of an acceptable level at least one aspect relating to a quality of connection achieved through the piconet front end by comparing a determined link quality through the piconet front end and a minimum link quality threshold, and activates the user link acceptable quality indicator based on a quality of said condition above said acceptable level (p. 8, lines 5-31 – p. 9, lines 1-13; figs. 3A and 3B).

Independent claim 7 recites a method of optimizing link quality of a wireless piconet device to a user. The method comprises determining an acceptable level of at least one aspect of a digital link quality of a wireless digital connection to a short range network, with a user of the wireless piconet device configuring the acceptable level (p. 8, lines 5-31 – p. 9, lines 1-13; figs. 3A and 3B). The user is provided with an indication of compliance to this acceptable level necessary to establish a presence in a piconet network of the at least one aspect of said digital link quality (p. 7, lines 24-30 – p. 8, lines 1-4). This acceptable level is determined by comparing the digital link quality and a minimum digital link quality threshold (p. 8, lines 5-31). The user is also provided with an indication of an amount of quality achieved above this compliance to the acceptable level, which amount is determined by an amount the digital link quality exceeds the minimum digital link quality threshold (p. 6, lines 17-35; p. 7, lines 20-31 – p. 8, lines 1-4).

Independent claim 16 recites an apparatus for optimizing link quality of a wireless piconet device to a user. The apparatus comprises a means for determining an acceptable level of at least one aspect of a digital link quality of a wireless digital connection to a short range network, with a user of the wireless piconet device configuring the acceptable level (p. 8, lines 5-31 – p. 9,

lines 1-13; figs. 3A and 3B; fig. 1. ref. 102). There is also a means for providing to the user an indication of compliance to this acceptable level necessary to establish a presence in a piconet network of the at least one aspect of said digital link quality (p. 7, lines 24-30 – p. 8, lines 1-4; fig. 1, ref. 100). This acceptable level is determined by comparing the digital link quality and a minimum digital link quality threshold (p. 8, lines 5-31). There is also a means for providing an indication of an amount of quality achieved above this compliance to the acceptable level, which amount is determined by an amount the digital link quality exceeds the minimum digital link quality threshold (p. 6, lines 17-35; p. 7, lines 20-31 – p. 8, lines 1-4; fig. 1 ref. 100).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-14 and 16-23 are obvious over U.S. Pat. No. 6,490,439 to Croft *et al.* ("Croft") in view of U.S. Pat. No. 6,127,936 to Gendel *et al.* ("Gendel"), U.S. Patent No. 5,711,004 to Blasiak *et al.* ("Blasiak") and U.S. Patent No. 6,311,982 to Lebensfeld *et al.* ("Lebensfeld").

(7) ARGUMENT

Claims 1-14 and 16-23 are not obvious under 35 U.S.C. § 103(a) over Croft in view of Gendel, Blasiak and Lebensfeld.

Claims 1-14 and 16-23 recite a system and method that determine an amount of quality achieved above a compliance level to an acceptable level necessary to establish a presence in a piconet network, the acceptable level being configurable by a user of a wireless piconet device; and provides for an indication of a quality above an acceptable level.

Croft discloses a lighted antenna that can be used to show that the transceiver is transmitting or receiving signals, that a data connection has been made, or that a Bluetooth piconet has been detected. (See Croft, Abstract). Croft discloses that the antenna can be used to provide a visual indication that conveys information to a user about the strength of the incoming signals, or

whether a receiver is transmitting or receiving. See col. 8, line 57 to col. 9, line 2; and col. 9, line 61 to col. 10, line 3. Thus, Croft conveys to a user a visual indication about a connection status and not about a quality of a connection.

The Examiner relied on Gendel to allegedly make up for the deficiencies in Croft to arrive at the claimed features. Gendel, however, appears to disclose a system and method of providing a visual and/or audio indication of a magnitude of a received signal strength for a wireless communications system (See Abstract). Depending on the magnitude of the signal strength, an LED is flashed a certain number of times in quick succession to indicate that magnitude (See col. 4, lines 54-56).

Thus, Gendel discloses a system and method that relies on received signal strength as a basis for providing a visual and/or audio indication of the total amount of the strength of that received signal. However, Gendel simply divides the total signal strength up into seven equal increments (See Fig. 1) and flashes a LED from one to seven times to provide a user with an indication of the total amount received signal strength.

Neither Gendel nor Croft discloses or suggests determination of an “acceptable [link quality] level necessary to establish a presence in a piconet network” (Claim 1), as recited by claims 1-14 and 16-23. Likewise, neither Gendel nor Croft discloses or suggests a system and method that determines a link “quality achieved beyond that of an acceptable level necessary to establish a presence in a piconet network, said acceptable level being configurable by a user of said wireless piconet device” (Claim 1), and that “activates [a] variable user link acceptable quality indicator” based not on the total amount of link quality but rather “on a quality of [a] condition above [the] acceptable level” (Claim 1) necessary to establish a presence in a piconet network, as also recited by claims 1-14 and 16-23.

The Examiner points to Blasiak at col. 5, lines 16-30 to allegedly disclose that an “adaptive signal quality (e.g. signal strength) threshold, set by a user for a wireless communication device to perform a particular function based

on the signal quality, is a common practice" (see 11/09/06 Office Action, page 3). The Applicants respectfully disagree.

Blasiak appears to disclose use of a "signal quality threshold" that can be set to various thresholds depending upon the type of data being transmitted, *i.e.*, voice versus data. However, the "signal quality threshold" that can be set to various thresholds (depending upon the type of data being transmitted) is a determination of a point at which hand-offs are forced (see col. 5, lines 27-30). Thus, Blasiak's invention is unrelated to a system and method of providing any type of indication of a quality of a network, much less disclosing or suggesting an indication that is based on an amount of "quality achieved beyond that of an acceptable level necessary to establish a presence in a piconet network, said acceptable level being configurable by a user of said wireless piconet device" (Claim 1), as recited by claims 1-14 and 16-23.

Moreover, Blasiak lacks any application to the particular issues surrounding piconets. Thus, Blasiak fails to disclose or suggest application to the claimed piconet, much less disclose or suggest an indication that is based on an amount of "quality achieved beyond that of an acceptable level necessary to establish a presence in a piconet network, said acceptable level being configurable by a user of said wireless piconet device" (Claim 1), as recited by claims 1-14 and 16-23. The Examiner completely ignored the context of Blasiak's invention.

Moreover, modification of Croft, the primary reference allegedly being modified by the Examiner, would result in Croft using a "signal quality threshold" that can be set to various thresholds depending upon the type of data being transmitted as a determination of a point at which hand-offs are forced. However, Croft's invention is directed toward a lighted antenna used to provide a visual indication of a wireless signal to a user. Modification of Croft's invention for a lighted antenna as a determination of a point at which hand-offs are forced is nonsensical. Croft's invention is completely unrelated to hand-offs. Thus,

modification of Croft with Blasiak's invention is nonsensical and a completely unobvious modification of Croft.

The Examiner also pointed to Lebensfeld at fig. 5 and col. 10, lines 46-65 to allegedly disclose the same feature as Blasiak – an “adaptive signal quality (e.g. signal strength) threshold, set by a user for a wireless communication device to perform a particular function based on the signal quality, is a common practice” (see 11/09/06 Office Action, page 3). The Applicants respectfully disagree.

Lebensfeld's fig. 5 is a circuit diagram of a receiver used to play the disclosed game. Lebensfeld at col. 10, lines 46-65 simply discloses a manually adjustable threshold of detected signal strength as a determiner of when to output different audio messages. However, Lebensfeld's invention, like Blasiak invention, fails to disclose or suggest application to the claimed piconet, much less disclose or suggest an indication that is based on an amount of “quality achieved beyond that of an acceptable level necessary to establish a presence in a piconet network, said acceptable level being configurable by a user of said wireless piconet device” (Claim 1), as recited by claims 1-14 and 16-23.

Moreover, Lebensfeld relies on analog communications between a transmitter and receiver (see fig. 5). Lebensfeld's invention lacks any relevance to digital networks, much less to a piconet. Modification of Croft (which relies on digital communications) with an analog signal strength determiner from Lebensfeld is nonsensical since it provides providing no functionality to Croft.

Thus, the Examiner's took Blasiak's disclosure and Lebensfeld's disclosure completely out of context. Taking Blasiak's disclosure and Lebensfeld's disclosure within context fails to disclose application to the unique problems associated with piconets, much less provide for any type of indication of a quality above an acceptable level, as recited by claims 1-14 and 16-23.

Croft, in view of Gendel, Blasiak and Lebensfeld, still fails to disclose or suggest a system and method that determines an amount of “quality achieved beyond that of an acceptable level necessary to establish a presence in

a piconet network, said acceptable level being configurable by a user of said wireless piconet device" (Claim 1), and provides for an indication of a quality above an acceptable level, as recited by claims 1-14 and 16-23.

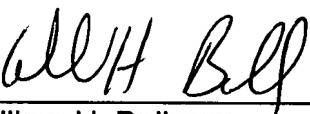
A benefit of such a system and method that determines an amount of quality achieved above an acceptable link quality level necessary to establish a presence in a piconet network, the acceptable level being configurable by a user of a wireless piconet device; and provides for an indication of a quality above an acceptable level is, e.g., a more informed indication of connection quality needed for a particular application. In many applications, a user is only interested in receiving an indication of a link quality that would support a specific application. Such an application could be video and/or audio transmissions. Providing a user with an acceptable link quality level necessary to establish a presence in a piconet network, the acceptable level being configurable by a user of a wireless piconet device allows a user to determine if a link quality will meet a user's requirements for a particular application. The cited prior art fails to disclose or suggest the claimed features having such benefits.

For at least all the above reasons, claims 1-14 and 16-23 are patentable over the prior art of record. It is therefore respectfully requested that the rejection of these claims under 35 U.S.C. § 103(a) is improper and should be reversed.

CONCLUSION

For all the reasons set forth above, the rejections of claims 1-14 and 16-23 are improper and should be reversed. The Applicants therefore respectfully requests that this Appeal be granted and that the rejections of the claims be reversed.

Respectfully submitted,



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CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL

1. A wireless piconet device, comprising:
 - a piconet front end;
 - a piconet connection acceptable quality determiner; and
 - a variable user link acceptable quality indicator to indicate an amount of quality achieved beyond that of an acceptable level necessary to establish a presence in a piconet network, said acceptable level being configurable by a user of said wireless piconet device;
wherein said piconet connection acceptable quality determiner determines a condition of an acceptable level at least one aspect relating to a quality of connection achieved through said piconet front end determined by comparing a determined link quality through said piconet front end and a minimum link quality threshold, and activates said variable user link acceptable quality indicator based on a quality of said condition above said acceptable level.
2. The wireless piconet device according to claim 1, wherein:
said piconet front end conforms to BLUETOOTH standards.
3. The wireless piconet device according to claim 1, wherein:
said variable user link acceptable quality indicator indicates audibly.
4. The wireless piconet device according to claim 1, wherein:
said variable user link acceptable quality indicator indicates visibly.
5. The wireless piconet device according to claim 4, wherein said visible variable user link acceptable quality indicator comprises:
an LED.

6. The wireless piconet device according to claim 4, wherein said visible variable user link acceptable quality indicator comprises:
a graphical display.

7. A method of optimizing link quality of a wireless piconet device to a user, comprising:

firstly determining an acceptable level of at least one aspect of a digital link quality of a wireless digital connection to a short range network, said acceptable level being configurable by a user of said wireless piconet device;

providing a first indication of compliance to said acceptable level necessary to establish a presence in a piconet network of said at least one aspect of said digital link quality, to said user; and

providing an indication of an amount of quality achieved above said compliance to said acceptable level;

wherein said acceptable level of said at least one aspect is determined by comparing said digital link quality and a minimum digital link quality threshold; and

said amount of quality achieved above said compliance to said acceptable level is determined by an amount said digital link quality exceeds said minimum digital link quality threshold.

8. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, further comprising:

allowing said user to physically move said wireless piconet device;
and

secondly determining said acceptable level of said at least one aspect of said digital link quality.

9. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, wherein said firstly determining comprises:

generating a Read_RSSI command; and
retrieving an RSSI value returned in response to said generated Read_RSSI command.

10. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, wherein said firstly determining comprises:

generating a Get_Link_Quality command; and
retrieving a digital link quality value returned in response to said generated Get_Link_Quality command.

11. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, wherein:

said wireless connection is a piconet connection.

12. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, wherein:

said wireless connection is a scatternet connection.

13. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, wherein:

said indication is audible.

14. The method of optimizing link quality of a wireless piconet device to a user in accordance with claim 7, wherein:

said indication is visible.

15. (canceled)

16. Apparatus for optimizing link quality of a wireless piconet device to a user, comprising:

means for firstly determining an acceptable level of at least one aspect of a digital link quality of a wireless digital connection to a short range network, said acceptable level being configurable by a user of said wireless piconet device;

means for providing a first indication of compliance to said acceptable level necessary to establish a presence in a piconet network of said at least one aspect of said digital link quality, to said user; and

means for providing an indication of an amount of quality achieved above said compliance to said acceptable level;

wherein said acceptable level of said at least one aspect is determined by comparing said digital link quality and a minimum digital link quality threshold; and

said amount of quality achieved above said compliance to said acceptable level is determined by an amount said digital link quality exceeds said minimum digital link quality threshold.

17. The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, further comprising:

means for allowing said user to physically move said wireless piconet device; and

means for secondly determining said acceptable level of said at least one aspect of said digital link quality.

18. The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, wherein said means for firstly determining comprises:

means for generating a Read_RSSI command; and

means for retrieving an RSSI value returned in response to said generated Read_RSSI command.

19. The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, wherein said means for firstly determining comprises:

means for generating a Get_Link_Quality command; and

means for retrieving a digital link quality value returned in response to said generated Get_Link_Quality command.

20. The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, wherein:
said wireless connection is a piconet connection.

21. The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, wherein:
said wireless connection is a scatternet connection.

22. (original) The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, wherein:
said indication is audible.

23. (original) The apparatus for optimizing link quality of a wireless piconet device to a user in accordance with claim 16, wherein:
said indication is visible.

24. (canceled)

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None